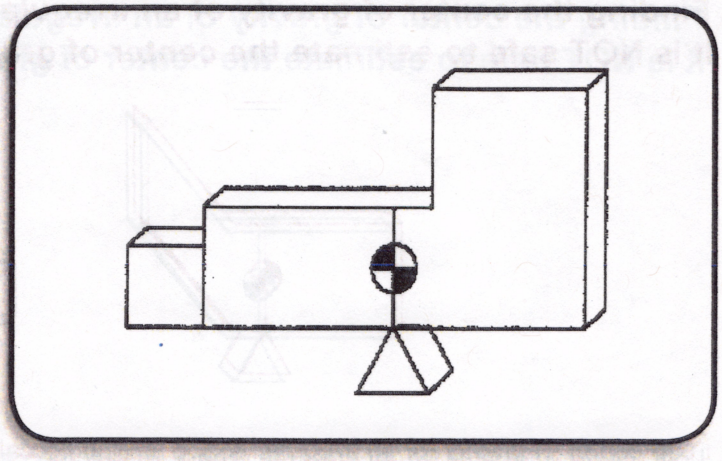
Module 12
Load Center of Gravity



Learning Objectives

By the end of this section, you will:

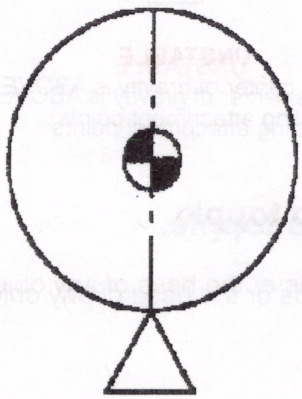
1. Understand the importance of identifying the center of gravity of a load.
2. Know the potential safety concerns when lifting irregularly-shaped loads.
3. Know proper sling placement and sling attachment points for unusual loads.

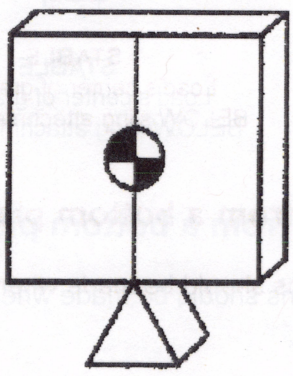
Prior and during to any lift, it is crucial that the hook be positioned directly over the load center of gravity.

On any lift, the main considerations are weight, size and center of gravity of the object being lifted. A hook not positioned over load center of gravity will cause load to swing or shift as it is being lifted. Load distribution will change on the slings and could cause damage or unusual loading on rigging.

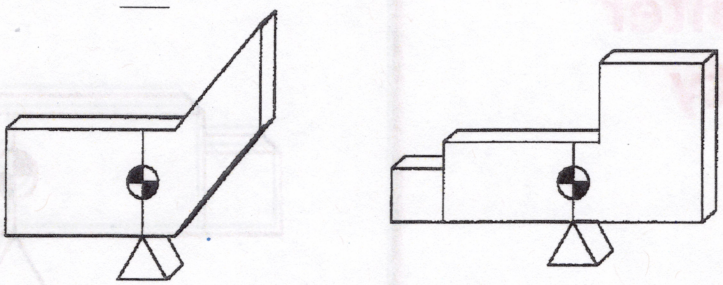
Determining load center of gravity is easier with loads that are uniform in size, shape and composition.

Center of gravity =





Finding the center of gravity of an irregular shaped load is typically difficult. It is NOT safe to estimate the center of gravity.



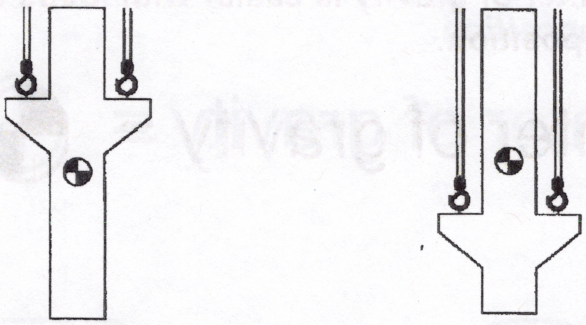
Load center of gravity for an irregular shape should be calculated. Too often, the center of gravity is estimated and rigging is adjusted as the load is being lifted. This is not a safe method of rigging. Special formulas can be used to calculate the exact load center of gravity.

Properly aligned load balance point will prevent abnormal stress on slings.

Angle and load on sling legs will vary greatly. Unusual loads will place load of center of gravity closer to one sling attachment point.

Some manufacturers will mark lifting points on oddly-shaped loads - especially when they are to be craned into place.

Sling attachment points should be above the load's center of gravity to prevent toppling.



STABLE
Load's center of gravity is BELOW sling attachment points

UNSTABLE
Load's center of gravity is ABOVE sling attachment points

Loads lifted from a bottom plane will tend to topple.

Safety precautions should be made when lifting pallets, skids or the base of any object.